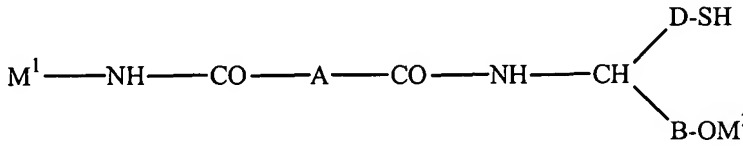
LISTING OF THE CLAIMS

1-35 (Cancelled)

36. (Withdrawn) A method of linking a first molecule M^1-NH_2 with a second molecule M^2-OH to form a molecule of Formula (VI),



(VI)

wherein

M^1 is the residue of a molecule bearing an amino group or a peptide residue;

M^2 comprises an oligonucleotide residue;

A is an alkylene group or an arylene group;

B is a linker or X-J

wherein

X is the residue of a functional group capable of reacting with a hydroxy group;

J is an alkylene or an arylene group; and

D is a C_{1-4} alkylene group or a C_{3-12} arylene group;

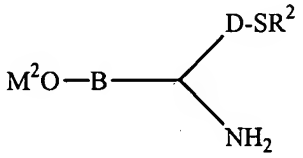
which method comprises reacting a compound of formula (I)

M^1-NH-CO-A-CO-SR^1 (I)

wherein

R^1 is alkyl or aryl;

with a compound of formula (II)



(II)

wherein

R^2 is hydrogen or a thiol protecting group.

37. (Withdrawn) A chemical compound of formula (I):

$$M^1\text{-NH-CO-A-CO-SR}^1 \qquad \text{(I)}$$

wherein

M^1 is the residue of a molecule bearing an amino group;

A is an alkylene group or an arylene group; and

R^1 is selected from the group consisting of alkyl and aryl.

38. (Withdrawn) The chemical compound according to claim 37 wherein M^1 comprises a peptide residue.

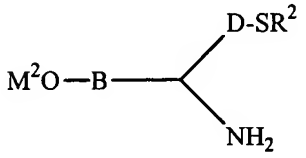
39. (Withdrawn) The chemical compound according to claim 37 wherein A comprises a C_{1-4} alkylene group.

40. (Withdrawn) The chemical compound according to claim 38 wherein A comprises an ethylene ($-CH_2-CH_2-$) or n-propylene ($-CH_2-CH_2-CH_2-$) group.

41. (Withdrawn) The chemical compound according to claim 37 wherein R^1 comprises a C_{1-18} alkyl or C_{3-10} aryl group.

42. (Withdrawn) The chemical compound according to claim 41 wherein R^1 is selected from the group consisting of t-butyl, substituted or unsubstituted benzyl, substituted or unsubstituted phenyl, 2-pyridyl, 4-pyridyl, cyanomethyl carboxamidomethyl, 2-carboxamidoethyl and trifluoroethyl.

43. (Withdrawn) A chemical compound of formula (II):



(II)

wherein

M^2 comprises an oligonucleotide residue;

B is a linker;

D is a C_{1-4} alkylene group or C_{3-12} arylene group; and

R^2 is hydrogen or a thiol protecting group.

44. (Cancelled)

45. (Withdrawn) The chemical compound according to claim 43 wherein the linker B comprises a group of the formula

-X-J-

wherein

J is an alkylene or arylene group, and

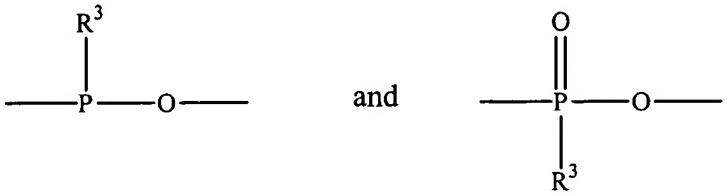
X is the residue of a functional group capable of reacting with a hydroxy group.

46. (Withdrawn) The chemical compound according to claim 45 wherein J is a C_{1-18} alkylene group or C_{3-12} arylene group.

47. (Withdrawn) The chemical compound according to claim 46 wherein J comprises a moiety derived from trans-4-aminocyclohexanol or 4-hydroxypiperidine.

48. (Withdrawn) The chemical compound according to claim 45 wherein X is a phosphate, thiophosphate, phosphonate or phosphite residue.

49. (Withdrawn) The chemical compound according to claim 48 wherein X comprises a group selected from



wherein

R^3 is selected from the group consisting of hydroxy, oxy anion and salts thereof, alkyl, alkoxy, aryloxy, thiol, thioxy anion and salts thereof, S-alkyl, S-aryl, N-azolyl and a dialkyl amino group.

50. (Withdrawn) The chemical compound according to claim 49 wherein R^3 is a 2-cyanoethoxy group.

51. (Withdrawn) The chemical compound according to claim 43 wherein D is a methylene or ethylene group.

52. (Withdrawn) The chemical compound according to claim 43 wherein R^2 is selected from the group consisting of hydrogen, alkyl, S-alkylsulfenyl, S-arylsulfenyl, alkylcarboxamidoalkyl, urethanyl and acyl groups.

53. (Withdrawn) The chemical compound according to claim 52 wherein R^2 is hydrogen, tert-butyl, sulfenyl or trityl.

54. (Withdrawn) The chemical compound according to claim 43 wherein the amino group of the compound of formula II is protected.

55. (Withdrawn) The chemical compound according to claim 54 wherein the amino group is protected with a protecting group, R^4 , wherein R^4 is selected from the group consisting of urethanyl, alkyl, alkylsulfenyl, aryl sulfenyl and sulfonyl protecting groups.

56. (Withdrawn) The chemical compound of the formula (III)

$$R^5\text{-CO-A-CO-S}R^1 \qquad \text{(III)}$$

wherein

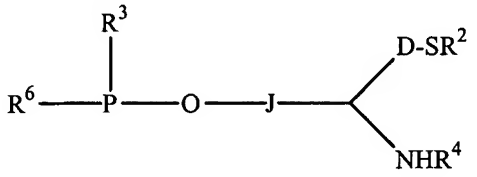
A is an alkylene group or an arylene group;

R^1 is alkyl or aryl; and

R^5 is selected from hydroxy, oxy anion and salts thereof, alkoxy, aryloxy, pentafluorophenoxy, N-succinimidyloxy, N-(norbornenedicarboximido)oxy, N-benzotriazolyloxy, N-(1,2-dihydro-1-oxo-2,3,4-benzotriazin-2-yl)oxy, halogen and N-azolyl groups; or together with the adjacent CO group forms an anhydride.

57. (Withdrawn) The chemical compound according to claim 56 wherein R^5 is a pentafluorophenoxy group.

58. (Withdrawn) The chemical compound of the formula (IV)



(IV)

wherein

D is a C_{1-4} alkylene group or a C_{3-12} arylene group;

J is an alkylene group or an arylene group;

R^2 is hydrogen or a thiol protecting group;

R^3 is selected from the group consisting of hydroxy, oxy anion and salts thereof, alkyl, alkoxy, aryloxy, thiol, thioxy anion and salts thereof, S-alkyl, S-aryl, N-azolyl, and a dialkylamino group;

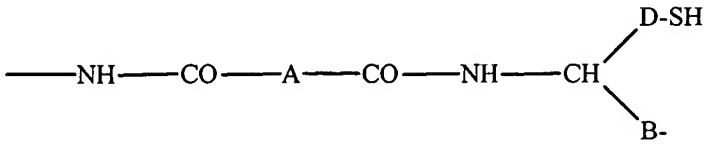
R^4 is selected from the group consisting of urethanyl, alkyl, alkylsulfenyl, aryl sulfenyl and sulfonyl; and

R^6 is selected from the group consisting of dialkylamino, imino, halogen N-azolyl, alkoxy, aryloxy, alkylthio, and arylthioaryl groups.

59. (Cancelled)

60. (Cancelled)

61. (Withdrawn) The chemical compound comprising a structural unit of formula (V)



(V)

wherein

A is an alkylene group or an arylene group;

B is a linker or X-J

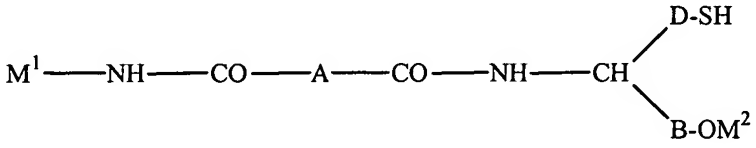
wherein

X is the residue of a functional group capable of reacting with a hydroxy group;

J is an alkylene or arylene group; and

D is a C_{1-4} alkylene group or a C_{3-12} arylene group.

62. (Previously Presented) A chemical compound of the formula (VI)



(VI)

wherein

M^1 is the residue of a molecule bearing an amino group or a peptide residue;

M^2 comprises an oligonucleotide residue;

A is an alkylene group or an arylene group;

B is a linker or X-J

wherein

X is the residue of a functional group capable of reacting with a hydroxy group;

J is an alkylene or an arylene group; and

D is a C_{1-4} alkylene group or a C_{3-12} arylene group.

63. (Previously Presented) The chemical compound of claim 62, wherein the compound is linked to a solid support.

64. (Withdrawn) A method according to claim 36 wherein M^1 comprises a peptide residue.

65. (Cancelled)

66. (Withdrawn) A method according to claim 36 wherein B comprises a group of the formula

-X-J-

wherein

J is an alkylene or arylene group; and

X is the residue of a functional group capable of reacting with a hydroxy group.

67. (Withdrawn) A method according to claim 36 wherein D is a C_{1-4} alkylene group or C_{3-12} arylene group.

68. (Withdrawn) A method according to claim 36 wherein D is a methylene or ethylene group.

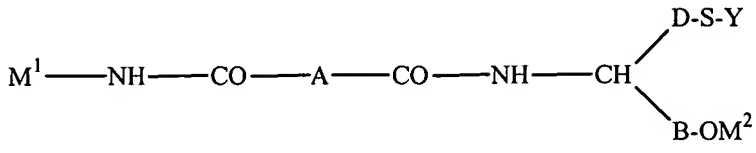
69. (Withdrawn) A method according to claim 36 wherein R^1 comprises a C_{1-18} alkyl or C_{3-10} aryl group.

70. (Withdrawn) A method according to claim 36 wherein R^1 is selected from the group consisting of t-butyl, substituted or unsubstituted benzyl, substituted or unsubstituted phenyl, 2-pyridyl, 4-pyridyl, cyanomethyl carboxamidomethyl, 2-carboxamidoethyl and trifluoroethyl.

71. (Withdrawn) A method according to claim 36 wherein R^2 is hydrogen or a thiol protecting group.

72. (Withdrawn) A method according to claim 36 wherein R^2 is selected from the group consisting of hydrogen, alkyl, S-alkylsulfenyl, S-arylsulfenyl, alkylcarboxamidoalkyl, urethanyl and acyl groups.

73. (Withdrawn) The chemical compound of the formula (VII)



(VII)

wherein

M^1 is the residue of a molecule bearing an amino group or a peptide residue;

M^2 comprises an oligonucleotide residue;

A is an alkylene group or an arylene group;

B is a linker or X-J

wherein

X is the residue of a functional group capable of reacting with a hydroxy group;

J is an alkylene or an arylene group;

D is selected from the group consisting of a C_{1-4} alkylene group and a C_{3-12} arylene group; and

Y is a labelling, reporter or effector group.

74. (Withdrawn) A method of linking a peptide and an oligonucleotide, which method comprises reacting the peptide and the oligonucleotide with a compound of claim 37, 43, 56, 58 or 61.

75. (Withdrawn) A method of producing a compound of formula (I), comprising reacting a compound of the formula

$$M^1\text{-}NH_2$$

with a chemical compound of the formula (III)

$$R^5\text{-}CO\text{-}A\text{-}CO\text{-}SR^1 \qquad (III)$$

wherein

M^1 is the residue of a molecule bearing an amino group or a peptide residue;

A is an alkylene group or an arylene group;

R^1 is alkyl or aryl; and

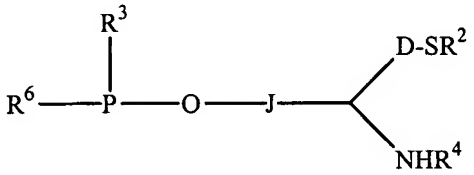
R^5 is selected from the group consisting of hydroxy, oxy anion and salts thereof, alkoxy, aryloxy, pentafluorophenoxy, N-succinimidyloxy, N-(norbornenedicarboximido)oxy, N-benzothiapolyloxy, N-(1,2-dihydro-1-oxo-2,3,4-benzotriazin-z-yl) oxy, halogen or N-azolyl.

76. (Cancelled)

77. (Withdrawn) A method of producing a compound of formula II, comprising reacting a compound of the formula

$$M^2\text{-OH}$$

with a chemical compound of the formula (IV)



(IV)

wherein

M^2 comprises an oligonucleotide residue;

D is a C_{1-4} alkylene group or a C_{3-12} arylene group;

J is an alkylene group or an arylene group;

R^2 is selected from the group consisting of hydrogen and a thiol protecting group;

R^3 is a linker or X-J;

wherein

X is the residue of a functional group capable of reacting with a hydroxy group;

R^4 is selected from the group consisting of methanyl, alkyl, alkylsulfenyl, aryl, sulfenyl and sulfonyl; and

R^6 is selected from the group consisting of dialkylamino, imino, halogen, N-azolyl, alkoxy, aryloxy, alkylthio, and arylthioaryl.

Claims 78-83: (Cancelled)

84. (Previously Presented) The chemical compound of claim 62 wherein, M^1 comprises a peptide residue.

85. (Previously Presented) The chemical compound of claim 62 wherein, A comprises a C_{1-4} alkylene group.

86. (Previously Presented) The chemical compound of claim 85 wherein, A comprises an ethylene ($-CH_2-CH_2-$) or n-propylene ($-CH_2-CH_2-CH_2-$) group.

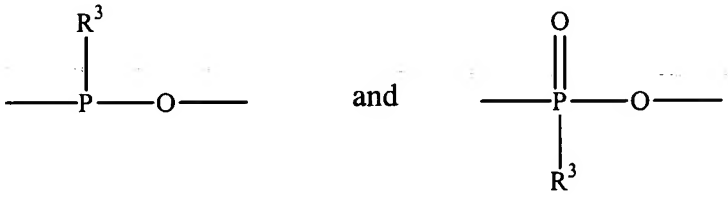
87. (Cancelled)

88. (Previously Presented) The chemical compound of claim 62, wherein J is a C_{1-18} alkylene group or C_{3-12} arylene group.

89. (Previously Presented) The chemical compound of claim 62, wherein J comprises a moiety derived from trans-4-aminocyclohexanol or 4-hydroxypiperidine.

90. (Previously Presented) The chemical compound of claim 62, wherein X is a phosphate, thiophosphate, phosphonate or phosphite residue.

91. (Previously Presented) The chemical compound of claim 62, wherein X comprises a group selected from



wherein

R^3 is selected from the group consisting of hydroxy, oxy anion and salts thereof, alkyl, alkoxy, aryloxy, thiol, thioxy anion and salts thereof, S-alkyl, S-aryl, N-azolyl and a dialkyl amino group.

92. (Previously Presented) The chemical compound of claim 62, wherein D is a methylene or ethylene group.